

WHAT IS CLAIMED IS:

1. A plant which is genetically engineered to overexpress glutamylcysteine synthetase and thereby provides enhanced heavy metal accumulation.

2. A plant according to claim 1 comprising a gene encoding the glutamylcysteine synthetase operably linked to a heterologous promoter.

3. A plant according to claim 1 which is a member of the brassicaceae family.

4. A plant according to claim 1 which is a *Brassica juncea*.

5. A plant according to claim 1 wherein the heavy metal is selected from chromium, molybdenum and tungsten.

6. A plant according to claim 1 wherein the heavy metal is selected from cadmium and mercury.

7. A plant according to claim 1 wherein the heavy metal is uranium.

8. A plant according to claim 1, wherein the enhanced accumulation is at least 50% greater than an otherwise comparable untransformed engineered plant.

9. A plant according to claim 1, wherein the plant comprises a gene encoding the glutamylcysteine synthetase operably linked to a heterologous promoter, the plant is a *Brassica juncea*, the heavy metal is selected from chromium, molybdenum and tungsten and the enhanced accumulation is at least 50% greater than an otherwise comparable untransformed engineered plant.

10. A plant according to claim 1, wherein the plant comprises a gene encoding the glutamylcysteine synthetase operably linked to a heterologous promoter, the plant is a *Brassica juncea*, the heavy metal is selected from cadmium and mercury and the enhanced accumulation is

at least 50% greater than an otherwise comparable unengineered plant.

11. A plant according to claim 1, wherein the plant comprises a gene encoding the glutamylcysteine synthetase operably linked to a heterologous promoter, the plant is a *Brassica juncea*, the heavy metal is selected from tellurium and polonium and the enhanced accumulation is at least 50% greater than an otherwise comparable unengineered plant.

12. A plant according to claim 1, wherein the plant comprises a gene encoding the glutamylcysteine synthetase operably linked to a heterologous promoter, the plant is a *Brassica juncea*, the heavy metal is uranium and the enhanced accumulation is at least 50% greater than an otherwise comparable unengineered plant.

13. A method for decreasing heavy metal content of a medium, comprising the steps of: (a) identifying a medium as containing an excessive amount of a heavy metal; and (b) growing a plant according to claim 1 in the medium, under conditions wherein the glutamylcysteine synthetase is overexpressed, whereby the plant provides enhanced accumulation of the heavy metal, whereby the heavy metal content of the medium is decreased.

14. A method for decreasing heavy metal content of a medium, comprising the steps of: (a) identifying a medium as containing an excessive amount of a heavy metal; and (b) growing a plant according to claim 7 in the medium, under conditions wherein the glutamylcysteine synthetase is overexpressed, whereby the plant provides enhanced accumulation of the heavy metal, whereby the heavy metal content of the medium is decreased.

15. A method for decreasing heavy metal content of a medium, comprising the steps of: (a) identifying a medium as containing an excessive amount of a heavy metal; and (b) growing a plant according to claim 8 in the medium, under conditions wherein the glutamylcysteine synthetase is overexpressed, whereby the plant provides enhanced accumulation of the heavy metal, whereby the heavy metal content of the medium is decreased.

16. A method for decreasing heavy metal content of a medium, comprising the steps of: (a) identifying a medium as containing an excessive amount of a heavy metal; and (b) growing a plant according to claim 9 in the medium, under conditions wherein the glutamylcysteine synthetase is overexpressed, whereby the plant provides enhanced accumulation of the heavy metal, whereby the heavy metal content of the medium is decreased.

17. A method for decreasing heavy metal content of a medium, comprising the steps of: (a) identifying a medium as containing an excessive amount of a heavy metal; and (b) growing a plant according to claim 10 in the medium, under conditions wherein the glutamylcysteine synthetase is overexpressed, whereby the plant provides enhanced accumulation of the heavy metal, whereby the heavy metal content of the medium is decreased.

18. A method for decreasing heavy metal content of a medium, comprising the steps of: (a) identifying a medium as containing an excessive amount of a heavy metal; and (b) growing a plant according to claim 11 in the medium, under conditions wherein the glutamylcysteine synthetase is overexpressed, whereby the plant provides enhanced accumulation of the heavy metal, whereby the heavy metal content of the medium is decreased.

19. A method according to claim 13, wherein the medium is soil.

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